

REMARKS/ARGUMENTS

Applicants have received the Office Action dated March 20, 2009, in which the Examiner: 1) rejected claims 1-2, 16-17, 27-28, 33-34 and 40-41 under 35 U.S.C. § 102(b) as being allegedly anticipated Hughes (U.S. Pub. No. 2002/0184453); and 2) rejected claims 3-15, 18-26, 29-32, 35-39 and 42-46 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Hughes in view of Van Loo (U.S. Pat. No. 5,657,472). With this Response, Applicants traverse the claim rejections and respectfully request reconsideration and allowance of this case.

I. REJECTIONS UNDER 35 U.S.C. § 102(b)

A. Claims 1 and 2

Claim 1 requires a home node and a requestor. The claim further requires three messages being passed between the home node and requestor, as also illustrated in Applicants' Fig. 1. The request provides a request to the home node and the home node provides a transaction reference ("FM" in Fig. 1) back to the requester in response to the request. The requester provides an acknowledgment message ("FM ACK") to the home node in response to the transaction reference (FM) message. The transaction reference "enable[s] the requester to determine an order of requests at the home node relative to the request from the requester. Applicants respectfully submit that the rejection is flawed in several regards.

First, Hughes lacks a teaching of the claimed "transaction reference" which is received by the requester to enable the requester to determine an order of requests at the home node relative to the request from the requester. That is, the requester is able to determine the order of requests at a different node (specifically, the home node) based on the transaction reference received by the requester. For claim 1, the Examiner focused on paras. [0005] and [0006] of Hughes.

Paragraph [0005] teaches that an initiator issues a write request to a target and the target may respond with an acknowledgment. This teaching is clearly different than the claimed feature of claim 1.

Paragraph [0006] teaches that an initiator issues a read request to a target device. The target device returns the requested data to the initiator. The requested data may be returned in multiple messages which may pass through different routes back to the initiator. Each return data message has a “transaction identifier” that enables the initiator to re-assemble the return data messages in the correct order. The transaction identifier of Hughes does not enable the initiator to determine the order of requests at the target device relative to the request from the requester.

Hughes also lacks a teaching of the three-message feature of claim 1; (1) a request from requester to home node, (2) a transaction reference from home node to requester, and (3) a transaction reference acknowledgment from requester to home node. At most Hughes teaches a write request followed by an acknowledgment, or a read request followed by one or more data response messages.

For at least these reasons, claim 1 and dependent claim 2 are allowable over Hughes.

Claim 2 requires the home node to provide a snoop associated with the request from the requester. The Examiner pointed to para. [0165] discloses this limitation, but Applicants find no mention of a snoop in para. [0165] or elsewhere in Hughes.

B. Claims 16 and 17

Independent claim 16 requires first and second requesting processors and a home node. The first and second requesting processors provide first and second requests, respectively, to the home node. One of the first and second requesting processors receives a transaction reference message from the home node. The transaction reference message is employed by the requesting processor that receives it to “ascertain a relative order of the first and second requests for the data ordered at the home node.”

The Examiner referred to paras. [0005] and [0006] from Hughes as allegedly teaching this claimed feature. Such paragraphs, however, lack a teaching or even a suggestion of such a “transaction reference.” Paragraph

[0006] teaches that return read messages with data contain a transaction identifier that enables the initiator of the read transaction to re-assemble the returned data in the correct order. But, the transaction identifier does not enable the initiator to ascertain a relative order of requests received at the target, from at least two different initiators, for target's requested data.

For at least these reasons, claim 16 and dependent claim 17 are allowable over Hughes.

For claim 17 the Examiner simply stated that "[c]laim 17 is rejected using similar reasoning as claim 2." Applicants note that claim 17 has limitations that are different from claim 2. Applicants do not find the limitations of claim 17 in Hughes and request a detailed explanation as to wherein in Hughes the Examiner believes the limitations of claim 17 are present.

C. Claims 27 and 28

Independent claim 27 requires a transaction reference field in the transaction structure of a processor. As amended, the transaction reference field provides an indication of the order of transactions "targeting" the data at the home node. Per claim 27, the claimed processor is not the home node. Thus, a non-home node (e.g., a requester node) has a transaction reference field that provides an indication of the order of transactions that target data at the home node. The amendment, which is well-supported by the specification, clarifies that the claimed "order" refers to the order of transactions that target data in the home node, not, as in Hughes, the order of data packets that are returned to the initiator for re-assembling in the correct order.

As explained above, Hughes lacks any such a teaching. For at least these reasons, claim 27 and dependent claim 28 are allowable over Hughes.

For claim 27, the Examiner simply stated that "[c]laim 27 is rejected using similar reasoning as claim 2." Applicants note that claim 27 has limitations that are different from claim 2 and that are not found in Hughes anyway.

D. Claims 33 and 34

The Examiner rejected claim 33 referring solely to paras. [0005] and [0006] and without any explanation. Independent claim 33 requires "means for providing

a transaction reference substantially in parallel with at least one snoop request.” Hughes lacks any teaching of a snoop request. Hughes also lacks any teaching of providing a transaction reference and a snoop request “substantially in parallel.”

Claim 33 also requires “means for responding to at least a second request provided to the requesting processor based on a condition of the transaction reference field when the at least a second request is received.” Hughes lacks any such response based on the stated condition of claim 33.

For at least these reasons, claim 33 and dependent claim 34 are allowable over Hughes.

For claim 34, the Examiner simply stated that “[c]laim 34 is rejected using similar reasoning as claim 2.” Applicants note that claim 34 has limitations that are different from claim 2. Further, Hughes lacks a teaching of deferring a response to a second request based on the specific claimed condition.

E. Claims 40 and 41

As with the other claims, the Examiner rejected claim 40 referring solely to paras. [0005] and [0006] and without any explanation. Independent claim 40 requires “providing a response from the requester to a second request for the block of data that varies temporally based on a condition of the fill marker status field at the requester.” Hughes lacks any teaching of providing such a response based on the stated condition of claim 40. For at least this reason, claim 40 and dependent claim 41 are allowable over Hughes.

For claim 41, the Examiner simply stated that the claim is rejected “using similar reasoning as claim 2.” Applicants note that claim 41 has limitations that are different from claim 2. At any rate, Applicants do not find the limitations of claim 41 in Hughes.

II. REJECTIONS OF CLAIMS 3-15, 18-26, 29-32, 35-39, AND 42-46 UNDER 35 U.S.C. § 103(a)

Claims 3-15, 18-26, 29-32, 35-39 and 42-46 depend from independent claims that are allowable over Hughes as explained above. Van Loo does not satisfy the deficiencies of Hughes. For at least this reason, claims 3-15, 18-26,

29-32, 35-39 and 42-46 are not obvious over Hughes in view of Van Loo. Additional reasons are provided below in support of the allowability of various of these claims.

A. Claim 6

Dependent claim 6 requires that “the requester is configured to employ data received in response to the request from the requester for a single use if the requester receives an invalidate command before receiving a copy of the data in response to the request from the requester and when a transaction reference has not yet been received by the requester.” Applicants’ respectfully submit that the Examiner’s rejection makes no sense. The Examiner alleges that Hughes teaches the first, non-underlined part of the claim and that Van Loo teaches the latter, underlined part of the claim.

The Examiner’s statement regarding Van Loo is as follows:

“Van Loo teaches that if the requester receives an invalidate command before receiving a copy of the data in response to the request from the requester and when a transaction reference has not yet been received by the requester.”

This statement is an incomplete sentence. The Examiner’s statement essentially is: Van Loo teaches that if a certain condition is true. The Examiner fails to indicate what Van Loo discloses is to happen if that condition is true. Van Loo certainly does not disclose what the claim requires which is, if the claimed condition is true, for the requester to employ data for a single use. The Examiner has simply picked snippets of discussion from various references improperly using hindsight of Applicants’ teachings. The Examiner has not presented any objective evidence to establish that one of ordinary skill in the art would have believed the limitation obvious of employing data for single use if an invalidate command is received before receiving a copy of the data and when a transaction reference has not yet been received. At any rate, Van Loo simply only discloses that an invalidate command is sent to the cache memory storing the same data block as the data block being written to main memory. This use of an invalidate command is substantially different from what is required by claim 6, and Hughes fails to satisfy this deficiency of Van Loo.

B. Claim 9

Claim 9 depends from claim 8, which introduces a second requester that provides a request and a particular order at which the home node receives the second request subsequent to the first request. Claim 9 requires that the home node issues transaction reference associated with the second request, which is provided by the second requester (claim 8). The reliance by the Examiner on Van Loo at col. 71, lines 30-39 relates to clearing a S_REQ status bit when a P_REPLY is received. The P_REPLY in Van Loo is used by a port to acknowledge a system controller request (S_REQ). Van Loo at col. 11, lines 10-12. Thus, the cited section of Van Loo at col. 71, lines 30-39, simply clears a status bit when a port acknowledges the S_REQ - not information indicating that a request has been completed (claim 9).

C. Claim 11

Regarding claim 11, the requester comprises a processor having a miss address file. In contrast, the cited section of Van Loo at col. 71 relates to the use of a S_REQ FIFO buffer that is part of the system controller - not the requester. For example, all S_REQ's for each processor are stored in a FIFO to ensure ordering requirements. See Van Loo, col. 71, lines 22 et seq. Moreover, the S_REQ status bits are cleared in response to receiving corresponding P_REPLY.

D. Claims 18-26, 29-32, 35-39, and 42-46

Many of claims 18-26, 29-32, 35-39, and 42-46 are separately allowable over the art of record for at least some of the same reasons articulated above.

CONCLUSION

Applicants respectfully request reconsideration and that a timely Notice of Allowance be issued in this case. It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are

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hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Hewlett-Packard Development Company's Deposit Account No. 08-2025.

Respectfully submitted,

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